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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/631,894
Filing Date: August 01, 2003
Appellant(s): USHIRO ET AL.

MAILED
AUG 24 2006
GROUP 1700

Daniel V. Williams
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7 June 2006 appealing from the Office action mailed 9 December 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner. Claims 25, 26, 28 & 51 rejected under 35 U.S.C 112, first paragraph.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

| | | |
|--------------|-----------------|---------|
| 2003/0082427 | PRASAD et al. | 5-2003 |
| 6,916,565 | SHIOYA | 7-2005 |
| 6,308,084 | LONKA | 10-2001 |
| 5,909,818 | BATEMAN | 6-1999 |
| 6,558,825 | FARIS et al. | 5-2003 |
| 6,118,949 | OHTANI | 9-2000 |
| 3,439,596 | PETERSON et al. | 1-1967 |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad (U.S. Pre-grant Publication No. 2003/0082427), as evidenced by Ohtani (U.S. Patent No. 6,118,949) and Peterson et al. (U.S. Patent No. 3,439,596), in view of Shioya (U.S. Patent No. 6,916,565).

Prasad teaches a removable fuel supply coupled to a fuel cell to power a portable electronic device. The fuel supply includes a fuel storage area enclosed by a first flexible inner container (applicant's flexible sheet member). The first flexible inner container is positioned within the interior of an outer container (applicant's casing). Fuel solution is passed from the fuel storage area to the fuel cell through a fuel solution outlet (applicant's fuel supply port) positioned at the opening of the first flexible inner container. The outer container also includes a waste inlet (applicant's discharged-solution recovery port) for feeding waste into the waste storage area. The waste storage area may be bounded by a second flexible inner container or by the casing alone. The fuel solution outlet and waste inlet are connected to a receptacle allowing for the transfer of fluids between the fuel supply and the fuel cell. An absorbent material (applicant's desiccant) may be placed within the waste storage area or the outer container. The fuel solution outlet and waste inlet ports face the same direction ([0020] – [0036]; Figures 2, 3 & 10-12). However, Prasad fails to disclose a secondary cell or the fuel cell system disposed at a side of a lens of a camera, where the secondary cell is adjacent to the fuel cell.

Shioya teaches a power supply system in which a secondary cell is charged by a fuel cell in order to prevent wasteful discharge of energy produced and to improve energy utilization (Col. 5, ll. 31-35; Col. 22, ll. 35-50; Fig. 12).

Therefore, one of ordinary skill in the art at the time the invention was made would have provided a secondary cell as taught by Shioya in the fuel cell system as taught by Prasad in order to improve energy utilization. Although not specifically stated,

one of ordinary skill in the art would find it obvious that Prasad's "portable electronic devices" would encompass an analog or digital camera and that placement of the power supply system of a camera at a side of the lens is conventional (see 6,118,949 - Figure 4 and 3,439,596 - Figure 3). The placement of the secondary cell adjacent to the fuel cell is a design choice and a rearrangement of parts. It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the secondary cell adjacent to the fuel cell, since it has been held that rearranging parts of an invention involves only routine skill in the art (*MPEP 2144.04*).

Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad (U.S. Pre-grant Publication No. 2003/0082427), in view of Shioya (U.S. Patent No. 6,916,565), and further in view of Lonka (U.S. Patent No. 6,308,084).

Prasad discloses portable electronic devices powered by fuel cells. A fuel supply system includes a fuel storing section formed by a flexible sheet member and a fuel supply port detachably connected to the supply port of the fuel electrode of the fuel cell ([0020] – [0027]). However, Prasad fails to disclose a secondary cell or the fuel cell system disposed at a portion of a portable telephone that includes a keyboard.

Shioya teaches a power supply system in which a secondary cell is charged by a fuel cell in order to prevent wasteful discharge of energy produced and to improve energy utilization (Col. 5, ll. 31-35; Col. 22, ll. 35-50; Fig. 12). Therefore, one of ordinary skill in the art at the time the invention was made would have provided a secondary cell as taught by Shioya in the fuel cell system as taught by Prasad in order

to improve energy utilization. One of ordinary skill in the art at the time the invention was made would find it obvious that Prasad's "portable electronic devices" would encompass a portable telephone even though it is not specifically stated; the artisan would also recognize that the conventional placement of a power supply in a portable phone is behind the keypad.

Lonka teaches a mobile communications device with a camera and keypad and a power supply system disposed in the part of the phone that includes the keypad. This placement creates a center of gravity as low as possible to make photographing easier in the vertical position (Figures 1A, 1B, 2A, 2B; Col. 2). This phone with camera provides the functionality of two electronic devices in one package.

Therefore, one of ordinary skill in the art at the time the invention was made would have used the fuel cell system as taught by Prasad and Shioya together in a portable phone with a camera as taught by Lonka in order to provide the convenience of two devices in one package with the power supply positioned such that the center of gravity is proper for use of the device. The placement of the secondary cell adjacent to the fuel cell is a design choice and a rearrangement of parts. It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the secondary cell adjacent to the fuel cell, since it has been held that rearranging parts of an invention involves only routine skill in the art (*MPEP 2144.04*).

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad (U.S. Pre-grant Publication No. 2003/0082427), in view of Shioya (U.S. Patent No. 6,916,565).

Prasad discloses portable electronic devices (specifically personal digital assistants, palm devices, laptop computer) powered by fuel cells. A fuel supply system includes a fuel storing section formed by a flexible sheet member and a fuel supply port detachably connected to the supply port of the fuel electrode of the fuel cell. (Fig. 1; Pg. 1, [0020] – Pg. 2, [0027]). However, Prasad fails to disclose a secondary cell.

Shioya teaches a power supply system in which a secondary cell is charged by a fuel cell in order to prevent wasteful discharge of energy produced and to improve energy utilization. (Col. 5, ll. 31-35; Col. 22, ll. 35-50; Fig. 12). Therefore, one of ordinary skill in the art at the time the invention was made would have provided a secondary cell as taught by Shioya in the fuel cell system as taught by Prasad in order to improve energy utilization. The placement of the secondary cell adjacent to the fuel cell is a design choice and a rearrangement of parts. It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the secondary cell adjacent to the fuel cell, since it has been held that rearranging parts of an invention involves only routine skill in the art (*MPEP 2144.04*).

Claims 51, 52, and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad (U.S. Pre-grant Publication No. 2003/0082427) in view of Shioya (U.S. Patent No. 6,916,565).

Prasad discloses a fuel supply removably coupled to a fuel cell to power a portable electronic device. The fuel supply includes a fuel storage area enclosed by a first flexible inner container (applicant's flexible sheet member). The first flexible inner container is positioned within the interior of an outer container (applicant's casing) and made of materials impervious and chemically stable to the fuel, which may be methanol. Fuel solution is passed from the fuel storage area to the fuel cell through a fuel solution outlet (applicant's fuel supply port) positioned at the opening of the first flexible inner container. The outer container also includes a waste inlet (applicant's discharged-solution recovery port) for feeding waste into the waste storage area. The waste storage area may be bounded by a second flexible inner container or by the casing alone. The fuel solution outlet and waste inlet are connected to a receptacle allowing for the transfer of fluids between the fuel supply and the fuel cell. (Pg. 1, [0020] – Pg. 3, [0036]; Figures 2, 3, 10-12). However, Prasad fails to disclose a secondary cell or the fuel cell system disposed at a side of a lens of a camera.

Shioya teaches a power supply system in which a secondary cell is charged by a fuel cell in order to prevent wasteful discharge of energy produced and to improve energy utilization. (Col. 5, ll. 31-35; Col. 22, ll. 35-50; Fig. 12). Therefore, one of ordinary skill in the art at the time the invention was made would have provided a secondary cell as taught by Shioya in the fuel cell system as taught by Prasad in order to improve energy utilization. The placement of the secondary cell adjacent to the fuel cell is a design choice and a rearrangement of parts. It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the

secondary cell adjacent to the fuel cell, since it has been held that rearranging parts of an invention involves only routine skill in the art (*MPEP 2144.04*).

Claims 53 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad (U.S. Pre-grant Publication No. 2003/0082427) in view of Shioya (U.S. Patent No. 6,916,565) and further in view of Bateman (U.S. Patent No. 5,909,818).

Prasad and Shioya together teach the elements of claim 53 as discussed in the previous 35 U.S.C. 103 rejection; however, neither reference teaches an antifreezing agent placed in the discharged-solution storage section.

Bateman teaches the addition of antifreeze to a water storage tank so that the water does not freeze. While Bateman's water storage tank is not used in conjunction with a fuel cell, the addition of antifreeze to the tank serves the same purpose as applicant's admitted purpose, that is, to prevent freezing of water in storage and, as such, is considered analogous art. Therefore, one of ordinary skill in the art at the time the invention was made would have included an antifreezing agent as taught by Bateman in the waste storage section of the fuel cell system as taught by Prasad and Shioya in order to prevent the water from freezing.

Claim 58 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad (U.S. Pre-grant Publication No. 2003/0082427) in view of Shioya (U.S. Patent No. 6,916,565) and further in view of Faris et al. (U.S. Patent No. 6,558,825).

Prasad and Shioya together teach the elements of claim 52, as discussed in the previous 35 U.S.C. 103 rejection. Prasad teaches a fuel storing section formed of a bag body, a casing including fuel supply and discharged-solution recovery ports that houses the bag body and forms the discharged solution storage section outside of the fuel bag body (Fig. 12). However, neither reference teaches a flexible casing.

Faris teaches a reservoir container for supplying fuel and collecting reaction products to and from fuel cells. This reservoir container is a flexible vessel with a fixed partition defining the chambers for fuel and waste. This allows for fuel to be force fed from the container to the fuel cell. (Col. 2, ll. 61-65; Col. 10, ll. 45-64; Fig. 4). Therefore, one of ordinary skill in the art at the time the invention was made would have made the casing of the fuel cell system as taught by Prasad flexible as taught by Faris in order to allow for force feeding the reactants to the fuel cell and waste to the storage container.

Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad (U.S. Pre-grant Publication No. 2003/0082427) in view of Shioya (U.S. Patent No. 6,916,565) and further in view of Faris et al. (U.S. Patent No. 6,558,825).

Together, these references teach the elements of claim 58 as discussed in the above 35 U.S.C. 103 rejection. None of the references teach a heating mechanism for heating the discharged-solution storing section or casing. The fuel cell system as taught by Prasad is used in small-scale fuel cell applications, such as portable electronic devices. These type devices are often used outdoors. If the temperature is cold enough to freeze the solution contained in the discharged-solution storing section or casing, the

section container or casing could be ruptured by the expansion of the solution upon freezing. It is common in many arts to use heaters to raise the temperature to avoid freezing. Additionally, the proximity of the fuel storage section and the discharged-solution storing section would allow for heat transfer from the discharged-solution to the fuel, bringing the reactant to a temperature closer to the operating temperature of the fuel cell. This would result in a more efficient system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a heating mechanism for heating the solution in the discharged-solution storing section or casing in order to keep the discharged solution from freezing and possibly rupturing the container.

(10) Response to Argument

A & B:

Appellant states the rejection fails to point to the parts of the Shioya reference that is applied to the instant application. As stated at the top of page 4 of the last office action, the office action points to "(Col. 5, ll. 31-35; Col. 22, ll. 35-50; Fig. 12)" as the excerpt showing the teachings of Shioya. So appellant's assumption for Figure 12 is correct.

Appellant argues the reference to placing the secondary cell adjacent to the fuel cell as a design choice is without merit since no motivation is provided. The appellant further states the placement of the claimed features provides a unique combination of elements, resulting in beneficial effects. It is unclear from the claims or the specification

what comprises these novel beneficial effects. On page 4 of the appeal brief, appellant states "it has been determined that it is better to place the secondary cell adjacent to the fuel cell to provide an efficient transfer of power, i.e., leakage of power during the transporting is reduced." The support for this statement does not appear present in the specification. However, it appears the statement is conveying a basic principle of physics. Since voltage and current are functions of resistance by the formula $V = I \times R$ (Voltage = I (current) x Resistance) and the resistance of a wire or conducting medium increases with distance, the shorter a distance between two electrical components, the less wire needed, then the lower the resistance and therefore the more voltage or current that can be transmitted between the two components, i.e., leakage of power is reduced during transportation.

Also on page 4 of the appeal brief, appellant states the closer two components are to each other, or even better integrated, then the total volume needed to house the components becomes smaller and the components can then fit into a smaller area, which is desirable for portable components. Again, support for this is not found in the specification or the claims. While the statement is not contested as to its validity, it is a simple spatial relationship and basic principle of engineering. The integrated chip (IC) is a prime example of reducing the sizes of components and integrating various components so that portable devices can become smaller.

Lastly, the appellants mention a sheet-like secondary cell placed around the fuel cell so as to package the fuel cell, resulting in an even more compact power generating system. Again, this compact system is not presented in the specification, drawings or

claims. As stated above, appellant points out an obvious engineering design idea that by reducing the sizes of the components that make up the device, the device can be made smaller.

Appellant submits that the combination of Shioya and Prasad are without merit. The motivation to combine the secondary cell of Shioya with the fuel cell of Prasad is to prevent wasteful discharge of energy produced and to improve energy utilization. The secondary cell also operates other control features of the device (Shioya ref. 22:51-67). The Ohtani and Peterson references are provided as evidence to show it is common to place the power supply system of a camera at the side of the lens. As for appellant's statement that the two evidence references are not mentioned in the body of the rejection, it is noted both references are mentioned in the body of the rejection on page 4, in the paragraph beginning with, "Therefore, one of ordinary skill in the art at the time of the invention..."

The claims describe the secondary cell as being adjacent to the fuel cell and appellant argues none of the references teach this limitation. The term adjacent is a relative term describing spatial relationships. In the context of a small portable device such as a camera or telephone, space is very limited and most of the components can be considered adjacent to any of the other components. In the same context, if adjacent is seen as a relative term for a single device, like the camera in figure 3 of the Peterson reference (US 3,439,596), then the batteries on the right side of the camera might be adjacent to the lens but not the view finder. So if another power system, a fuel cell, is placed into the camera to work in conjunction with the batteries, as taught by

Shioya, using the principals of physics discussed earlier, the fuel cell and batteries would be placed close to each other, on the same side of the camera, to reduce the length of wire needed to transmit the power. Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to reduce the resistance of the connecting wire by reducing the distance between the two power supplies, thereby reducing the internal resistance of the system and decreasing the transmission loss.

C.

Appellants appear to argue the teachings of Lonka do not make up for the placement of the secondary cell adjacent to the fuel cell. The Lonka reference is used to teach a mobile communications device with a camera and keypad and a power supply system disposed in the part of the phone that includes the keypad. This placement creates a center of gravity as low as possible to make photographing easier in the vertical position (Figures 1A, 1B, 2A, 2B; Col. 2). This phone with camera provides the functionality of two electronic devices in one package.

As for the arguments concerning the placement of the secondary battery adjacent to the fuel cell, for reasons stated above, it would be obvious to one skilled in the art to locate the secondary battery adjacent to the fuel cell.

D.

Appellant again argues the placement of the secondary cell adjacent to the fuel cell is not taught by the references. Since claim 28 is rejected under the same

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references as claim 25, Prasad in view of Shioya, the answer is the same as presented in the answer above in sections A, B and C.

E – H.

Appellant argues in each of the sections that the other references used to reject the respective dependent claims, fails to remedy the previous argument that the secondary cell is not taught to be located adjacent to the fuel cell. The responses presented in the above sections A – D are also applied to the arguments here.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Keith Walker



PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER

Conferees:

Patrick Ryan 

Steve Griffin 